Listing of the Claims:

1. (Currently Amended) A device for the formation of gradient layers on substrates in a vacuum chamber, comprising:

a particle source, the particle source including at least one plasma source ~~or vaporization device~~ directed upon the substrate surface to be coated;

a mask having discretely located perforations, the mask disposed between the particle source and the substrate, the mask having a constant thickness;

a drive means operating on the mask to provide oscillatory movement along at least one axis in a plane with respect to the substrate;

wherein a ratio of free cross-sections of said perforations discretely located in said mask~~,~~ and intermediate web surfaces of said mask per area unit is varied over at least one of the total surface, or on areas of said mask, and the distance between the surface of said substrate and said mask differs in size over the total surface or surface areas; ~~and~~

wherein ~~the~~said ratio of the free cross-sections of the perforations and the intermediate web surfaces per ~~unit~~ area unit is varied over at least one of the respective distance of the substrate surface and inclination of the surface substrate and the mask~~.~~: and

wherein the substrate and the mask are movable together relative with respect to the plasma source by a rotation of both the substrate and the mask about a common axis of rotation.

2. (Previously Presented) A device according to claim 1, wherein the perforations of said mask each have identical free cross-sections and cross-sectional geometries.

3. (Currently Amended) A device for forming gradient layers on substrate surfaces in a vacuum chamber, the device comprising:

a particle source producing a particle flow directed at the substrate surface to be coated;

a mask having discretely located perforations disposed between the particle source and the substrate, wherein the mask has a constant thickness wherein the perforations of the mask each have free cross-sections and cross-sectional geometries and wherein the free cross-sections of the perforations are formed in at least one of a circular, hexagonal, octagonal and elliptical form;

a drive means operating on the mask to provide oscillatory movement along at least one axis in a plane with respect to the substrate; ~~and~~

wherein a ratio of free cross-sections of the perforations located in the mask and intermediate web surfaces of the mask per unit area is varied over at least one of the total surface or on areas of the mask and wherein the distance between the surface of the substrate and the mask differs in size over the total surface or surface areas; and

wherein the substrate and the mask are movable together relative with respect to the plasma source by a rotation of both the substrate and the mask about a common axis of rotation.

4. (Previously Presented) A device, according to claim 1 wherein the ratio of said free cross-sections of said perforations and said intermediate web surfaces per unit of area are continuously varied along at least one axis.

5. (Previously Presented) A device according to claim 1, wherein the perforations are formed in a linear column and line arrangement within said mask.

6. (Original) A device according to claim 5, wherein said perforations are located offset to each other in the adjacent columns or lines.

7. (Previously Presented) A device according to claim 1, wherein distances between the perforations are varied along at least one axis.

8. (Withdrawn) A device according to claim 1, characterized in that the surface of said substrate is at least one of aligned at an angle obliquely inclined with respect to said mask and is curved.

9. (Canceled).

10. (Withdrawn) A device according to claim 1, characterized in that said mask is at least one of aligned at an angle obliquely inclined with respect to the surface of said substrate and is curved.

11. (Previously Presented) A device according to, claim 1 characterized in that the direction of motion of said oscillatory motion is aligned in parallel to at least one of the respective lines and columns of perforations.

12. (Previously Presented) A device according to claim 1, wherein the particle source is a plasma source and wherein the plasma source is a magnetron sputtering source.

13. (Canceled) ~~A device according to claim 1, wherein the substrate and said mask are movable together relative with respect to at least one of the plasma source and said target.~~

14. (Canceled) ~~A device according to claim 13, wherein the substrate and the mask rotate about a common axis of rotation, and wherein.~~

15. (Previously Presented) A device according to claim 1, wherein the drive for said oscillatory relative motion between the substrate and the mask is at least a piezo actuator.

16. (Withdrawn) A method for the formation of gradient layers on substrates in a vacuum chamber by means of which a particle current formed from a plasma source or by means of evaporation of a target material will be directed through a mask located between said particle source and said substrate, in which perforations are formed, characterized in that the local thickness of said formed layer on the substrate surface is defined by at least one of predetermined locally adapted ratios of free cross-sections and said intermediate web surfaces per unit of area and by holding of particular distances between the surface of said substrate (3) and said mask, and said mask having a constant thickness is moved oscillatorily along at least one axis relative to said substrate in a plane.

17. (Withdrawn) A method according to claim 16, characterized in that with an oscillatory motion the path to be traveled between inversion points or during a circular path motion the diameter corresponds to the mean distance of the centre or centre of gravity of said perforations.

18. (Withdrawn) A method according to claim 16, characterized in that said relative motion or said circular path motion is performed in the plane of the mask.

19. (Withdrawn) A method according to claim 16, characterized in that a gradient multilayer system having at least two different layer materials is formed on the surface of said substrate.

20. (Withdrawn) A method according to claim 16 , characterized in that one or several gradient layer(s) formed one above another will be formed on predetermined areas of the surface of said substrate.

21. (Withdrawn) A method according to claim 16, characterized in that the layer is formed by means of magnetron sputtering.

22. (Withdrawn) A method according to claim 16 characterized in that said substrate and said mask are moved together with respect to said particle source.

23. (Withdrawn) Use of a device according to claim 1 for the fabrication of X-ray optics elements.